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ABSTRACT

An intervention project by Teacher Corps interns in an elementary school was designed to improve student performance in mathematics. Activities carried out by the interns included: (1) construction of a school facade replica reflecting student achievement of identified math curriculum objectives, kindergarten through sixth grade; (2) preparation and presentation of a mathematics unit and study involving use of calculators by fifth-grade students and provision of special mathematics activities for accelerated sixth-grade students; (3) operation of a "Math Hotline" one evening per week to assist students and parents with homework; (4) preparation of mathematics activities and materials for interested students during lunch periods; and (5) planning and conducting a week of special events designed to enhance school spirit, in general, and student and staff motivation in math, in particular. In addition, a series of workshop sessions was conducted for all district elementary teachers. Appendix A presents a summary of feedback from the school staff on intern activities. Appendix B presents specific mathematics objectives for each of the grades from kindergarten through sixth grade. (JD)

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Teacher Corps * Project '79
The University of Toledo/
Springfield Local Schools

MATH "HOTLINE" AND OTHER ACTIVITIES: ASSESSMENT OF PROJECT INTERVENTION AT DORR ST. SCHOOL

Joan D. Inglis
Project Director

Lynn Haffey
Denise Lemerand
Aurelio Sanchez, Jr.
Ralph B. Carroll, Leader
Intern Team

James R. Gress
Evaluation Consultant

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November, 1982

SP 021 717

During January, February and March, 1982, The University of Toledo/ Springfield Local Schools Project, Teacher Corps Program '79, provided major support for the planning and implementation of intervention activities at Dorr St. Elementary School which addressed high-priority building goals and objectives constructed as a result of the initial needs assessment. Subsequently, the project supported external assessment of the intervention activities. This report includes description of the intervention and results of the assessment.

The Intervention

Intern activities at Dorr St. Elementary School began with preliminary discussions between Project Staff and Dorr St. representatives on December 15, 1981. It was agreed that Project Intervention at Dorr St. would focus on mathematics, including motivation, basic skills mastery, special homework assistance and use of electronic calculators and the computer. A follow-up meeting on December 21st gave interns orientation to the school district's then recently-installed computer capabilities.

The intern team met with the Dorr St. Intern Supervisory Team on January 4th and 6th, 1982. The meetings resulted in identification of the following specific activities to be carried out by the Project with principal support of the Interns: *

1. Construction of a school facade replica reflecting student achievement of identified math curriculum objectives, K-6;

2. Preparation and presentation of a math unit and study involving use of calculators by fifth-graders and provision of special math activities for accelerated sixth-graders;

3. Operation of a "Math Hotline" one evening per week to assist students and parents with math homework;

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* More complete detailing of Project Intervention activities at Dorr St. School can be found in the University of Toledo/Springfield Local Schools Project, Teacher Corps Program '79, "Intern Log," the Project, January - March, 1982.

4. Preparation of math activities and materials for use with interested students during noon lunch periods;

5. Special events.

During the same period, a series of workshop sessions, "Problem Solving in Mathematics," was conducted for all district elementary teachers by Prof. Thomas Gibney, and the January 18th District Inservice supported by the Project included a sharing of math activities and materials among members of the Dorr St. Staff. During this entire period, interns Lynn Haffey, Denise Lemerand and Aurelio Sanchez worked with Mrs. Judy Koroloff, a University of Toledo doctoral student assigned to the Project.

Construction of the Dorr St. School facsimile began on January 14th. Each Dorr St. student achieving mastery of a given Math Curriculum objective could put his/her name, class, date and objective on a construction paper "brick" to help "build" the facade replica. (A copy of the district's math objectives constructed via Project-sponsored curriculum development is contained in Appendix B.) During January, February and March, over 900 "bricks" were put into place.

Ms. Haffey and Denise provided math instruction for identified fifth-graders. The instruction focused on use of the electronic calculator, and it was provided for about one hour daily for a period of four weeks in January and February. Mr. Sanchez worked with identified sixth-graders during the same period and, later, the interns worked with a class of third-graders as well. The interns and a Dorr St. staff member, Mr. James Skelding, also worked formally and informally at introducing both staff and some students to use of a computer which was being installed at Dorr St.

A program of assistance for parents and their students at Dorr St. school was a "math hotline," designed and implemented by the

anterns. * Support for the hotline was obtained from the school's staff, and publicity was released to teachers, students and parents. Both local newspaper and radio media were used. The hotline was operated once weekly for two hours in the evening for twelve weeks. Beginning the sixth week of operation, use of the hotline was extended to students at other district schools and their parents.

During January, the interns constructed math activities and materials for use with interested students during the school's noon lunch and recess periods. Use was to begin on January 19th, but an acute space shortage prompted delay and, eventually, cancellation of the noontime plans. However, construction of materials for use in classroom learning centers continued during February, and those materials were turned over to Dorr St. teachers beginning March 9th.

Finally, the intern team planned and provided leadership for a number of special school events designed to enhance school spirit, in general, and student/staff motivation in math, in particular. On January 29th, students and staff were invited to wear athletic shirts displaying a favorite number. A week of activities begun on March 1st included emphasis on school "colors," a filmed interview in which fifth-graders who participated in the calculator instruction described experiences and feelings for airing on a local television station, and awarding of calculators to students at each grade level who participated in identified math activities. The interns also constructed a series of "brain teasers" for contest use in various classrooms.

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* A detailed description and assessment of the hotline is contained in Denise M. Lemerand's, "The Design, Implementation and Evaluation of a Math Hotline for Students in Grades 1-8," Unpublished Masters Degree Project, The University of Toledo, June, 1982.

A final special event was "metric day" on March 19th which emphasized use of metric scales in various school activities.

Interns concluded intervention activities on March 19, 1983.

Intervention Assessment

Feedback was solicited from Dorr St. School staff members about intervention activities. Responses about student and staff interest, quality of activity execution and increase in student achievement were tabulated, and they are displayed in Appendix A. In addition, the Lemerand project cited above includes an extensive assessment of the math hotline.

The summary of staff feedback in Appendix A shows very positive overall response to the Project intervention's stimulation of interest among staff and students, to the quality of activity execution, and to a consequent increase in student achievement. Sixteen staff respondents (55%) were particularly positive about the construction of a school facade replica which reflected student achievement of district math objectives. Respondents were also positive about classroom activities (calculator instruction, learnig center materials, and some special events), particularly the quality of their execution. One respondent also gave the interns "high marks" for the quality of their radio broadcast about the Dorr St. intervention.

Findings of the Lemerand project showed that both teachers and parents thought that the out-of-school homework assistance program was a good idea and that the program would be more efficient if available more than once weekly. However, continuing need for such a program was questioned, but not all students who reported hotline use made contact. Continued experimental use of a hotline program was recommended.

APPENDIX A

Summary of Dorr St. School Staff Feedback about Intern Activities, Winter, 1982.

Item	N Responses 6	5	4	3	2	1	NR	X
1. Stimulated Interest								
A. Math Objectives "Bricks"	7	7	2	-	-	-	-	5.31
B. Classroom Activities	5	7	2	1	-	-	1	5.07
C. "Hotline"	1	3	9	-	2	-	1	4.07
D. Other: None	-	-	-	-	-	-	-	-
2. Was Well Done								
A. Math Objectives "Bricks"	9	2	2	-	-	-	3	5.54
B. Classroom Activities	7	2	5	-	-	-	2	5.14
C. "Hotline"	4	4	3	1	-	-	4	4.92
D. Other: Radio Broadcast	-	1	-	-	-	-	15	5.00
3. Student Achievement								
A. Math Objectives "Bricks"	5	3	5	-	-	-	3	5.00
B. Classroom Activities	2	5	5	1	-	-	3	4.69
C. "Hotline"	1	3	5	2	1	-	4	4.08
D. Other: None	-	-	-	-	-	-	-	-

Intern Effectiveness Comment

I think the interns gained from their experiences here. The staff gained from the enthusiasm they generated by their motivational techniques.

Yes. Interest in problem-solving activities had just began to peak when primary class activities came to an abrupt halt. With Lynn having been called back to Holland to work -- it gave one a sense of things being incomplete. Answer packets were left unscored and children's accomplishments were left unrecognized.

Yes.

Very! Thanks a million! We enjoyed having you. Hotline was not as successful as I thought it would be but interns worked hard on it.

Very much so. My students enjoyed the weekly, fun, learning activities. It was beneficial as well as enjoyable. The bricks seemed to make learning progress easier to "see." Neat idea!

The interns weren't used in the classroom as much as they probably could've been.

Yes.

For the most part. We needed incentive in math and the bricks helped provide that. More activities could have been planned so that they had more contact with the students. They could have worked with larger groups so that it was more like teaching a full class.

Yes. They are very capable.

I don't believe the children knew the interns very well, or understood why they were there.

Super kids -- always ready to help in anyway possible. I wonder if we didn't over step our bounds.

They did a good job in motivating interest in Math.

Even if there were comments made about the Intern Program, those of us who were involved and took part know that the Interns worked very hard and long hours. They certainly put everything they had into the program. Thanks again Interns!

Denise Lemerand has really been a help to many of the teachers here at Dorr. She has filled in and planned activities of interest for students in her group.

There was more time spent on planning than doing.

The Hotline was a flop. They should have done more PR work on it in the classrooms.

So cooperative!

APPENDIX B

Elementary Mathematics Objectives

Kindergarten

1. Comparisons and Locations

The Student will:

1-1 Discuss real world experiences and interpret illustrations.
1-2 Decide which of two similar objects is larger.
1-3 Decide which of two similar objects is smaller.
1-4 Decide which of three objects is largest.
1-5 Decide which of three objects is smallest.
1-6 Decide which of two objects is longer.
1-7 Decide which of two objects is shorter.
*1-8 Decide which of three objects is longest.
*1-9 Decide which of three objects is shortest.
1-10 Identify an object located at the top.
1-11 Identify an object located at the bottom.
1-12 Identify objects on the left.
1-13 Identify objects on the right.

2. Shapes and Patterns

The Student will:

2-1 Recognize balls.
2-2 Recognize boxes.
2-3 Recognize cans.
2-4 Continue a pattern with shapes.
*2-5 Recognize circles, squares, and triangles.

3. Numbers to 3

The Student will:

3-1 Recognize groups of objects with the same number of objects.
3-2 Recognize the group of objects with more.
3-3 Recognize the group of objects with less.
3-4 Recognize 1, 2, and 3.
3-5 Color up to 3 shapes.
3-6 Write 1, 2, and 3.

*-Key objectives

4. Numbers to 5

The Student will:

4-1 Recognize 2 to 4.
4-2 Color 1 to 4 shapes.
4-3 Recognize 5.
*4-4 Recognize 3, 4, and 5.
4-5 Color 1 to 5 shapes.
*4-6 Write 1 to 5.
*4-7 Order numbers to 5.
4-8 Recognize numbers to 5.
4-9 Recognize 0.
4-10 Recognize 0, 1, and 2.
4-11 Write 0.

5. Numbers to 8

The Student will:

5-1 Recognize 6.
5-2 Recognize 4, 5, and 6.
5-3 Write 6.
5-4 Recognize 7.
5-5 Recognize 5, 6, and 7.
5-6 Write 7.
5-7 Recognize 8.
*5-8 Recognize 6, 7, and 8.
5-9 Write 8.
*5-10 Order numbers to 8.
5-11 Write numbers to 4.
*5-12 Write 5 to 8.

6. Numbers to 10

The Student will:

6-1 Recognize 9.
6-2 Recognize 7, 8, and 9.
6-3 Write 9.
6-4 Recognize 10.
*6-5 Recognize 8, 9, and 10.
6-6 Write 10.
6-7 Order numbers to 10.
6-8 Write numbers to 5.
*6-9 Write 6 to 10.

7. Readiness for Addition and Subtraction

The Student will:

7-1 Join two groups of objects and identify the number of objects altogether, using sums to 3.

7-2 Join two groups of objects and identify the number of objects altogether, using sums to 4.

*7-3 Join two groups of objects and identify the number of objects altogether, using sums to 5.

7-4 Join two groups of objects and identify the number of objects altogether, using sums to 6.

7-5 Remove 1 or 2 objects from a group of 3 or less and find the number left.

7-6 Remove 1 to 3 objects from a group of 4 and find the number left.

*7-7 Remove 2 to 4 objects from a group of 5 and find the number left.

7-8 Remove 2 to 4 objects from a group of 6 and find the number left.

*7-9 Recognize the value of 1 to 5 pennies.

7-10 Recognize the value of 5 to 8 pennies.

7-11 Recognize the value of 8 to 10 pennies.

7-12 Recognize the value of 6 to 10 pennies.

Elementary Mathematics Objectives

Grade 1

1. Numbers to 5

The Student will:

1-1 Recognize and write 1 and 2.

1-2 Recognize 1, 2, and 3, and write 3.

1-3 Recognize 2, 3, and 4, and write 4.

1-4 Recognize and write numbers to 4.

1-5 Recognize 3, 4, and 5, and write 5.

1-6 Recognize 0, 1, and 2, and write 0.

*1-7 Recognize and write numbers to 5.

1-8 Color up to five objects.

1-9 Recognize the group of objects with more.

1-10 Recognize the group of objects with less.

1-11 Read a picture graph and color up to 5 objects.

*1-12 Order numbers to 5.

2. Numbers to 10

The Student will:

2-1 Recognize 4, 5, and 6, and write 6.

2-2 Recognize 5, 6, and 7, and write 7.

2-3 Recognize 6, 7, and 8, and write 8.

2-4 Recognize 7, 8, and 9, and write 9.

2-5 Recognize 8, 9, and 10, and write 10.

*2-6 Recognize and write numbers 6 to 10.

2-7 Recognize which of two groups has one more.

2-8 Recognize which of two groups has one less.

2-9 Read a picture graph and color 5 to 10 objects.

2-10 Order numbers to 10.

3. Adding 1 and 2

The Student will:

3-1 Join two groups of objects and identify the numer of objects altogether, using sums to 5.

3-2 Recognize the symbols + and =.

3-3 Add 1 to a number with sums to 10.

3-4 Add 2 to a number with sums to 10.

3-5 Add 1 or 2 to anumber with sums to 10.

3-6 Recognize the value of a group of pennies and add 1 or 2 to a number with sums to 10 using pennies.

4. Subtracting 1 and 2

The Student will:

4-1 Remove 1 or 2 objects from a group of 5 or less and find the number left.

4-2 Use the symbols - and = for subtractions from numbers to 6.

4-3 Subtract 1 from numbers to 10.

4-4 Subtract 2 from numbers to 10.

4-5 Subtract 1 or 2 from numbers to 10.

4-6 Subtract 1 or 2 from numbers to 10 using pennies.

5. Addition-Subtraction Facts to 6

The Student will:

5-1 Add two numbers with sums to 5.

* 5-2 Add two numbers with sums to 6.

5-3 Use addition with sums to 6 in developing rebus problem solving skills.

* 5-4 Subtract two numbers with sums to 5.

* 5-5 Subtract two numbers with sums to 6.

* 5-6 Use subtraction with sums to 6 in developing rebus problem solving skills.

5-7 Add or subtract two numbers with sums to 6.

5-8 Recognize the value of pennies and a nickel.

6. Addition-Subtraction Facts for 7 and 8

The Student will:

6-1 Add two numbers with sums of 6 or 7.

6-2 Subtract two numbers with sums of 6 or 7.

6-3 Add or subtract two numbers with sums of 6 to 8.

* 6-4 Add or subtract two numbers with sums of 7.

* 6-5 Add or subtract two numbers with sums of 8.

6-6 Add or subtract two numbers with sums of 7 or 8.

6-7 Add or subtract two numbers with sums of 5 to 8.

* 6-8 Add three numbers with sums to 8.

6-9 Use addition or subtraction with sums of 7 or 8 in developing rebus problem solving skills.

7. Addition-Subtraction Facts for 9 and 10

The Student will:

7-1 Add two numbers with sums of 8 or 9.

7-2 Subtract two numbers with sums of 8 or 9.

7-3 Add or subtract two numbers with sums of 8 to 10.

* 7-4 Add or subtract two numbers with sums of 9.

* 7-5 Add or subtract two numbers with sums of 10.

7-6 Add or subtract two numbers with sums of 9 or 10.

7-7 Add or subtract two numbers with sums of 7 to 10.

7-8 Add three numbers with sums to 10.

* 7-9 Use addition or subtraction with sums of 9 or 10 in developing rebus problem solving skills.

8. Numbers to 20

The Student will:

8-1 Recognize and write 10.

8-2 Recognize the numbers 10 to 14.

* 8-3 Recognize the numbers 14 to 16 and write the number 10 to 15.

8-4 Recognize the numbers 16 to 18 and write the numbers 13 to 18.

* 8-5 Recognize the numbers 18 to 20 and write the numbers 15 to 20.

8-6 Recognize place value: tens and ones.

8-7 Recognize the value of dimes and pennies up to 20¢.

8-8 Write the numbers 11 to 18 and order numbers to 20.

8-9 Recognize which number is greater and which number is less for numbers 10 to 20.

* 8-10 Order numbers to 20.

9. Geometry and Measurement

The Student will:

* 9-1 Recognize boxes, cans, balls, and cones.

* 9-2 Recognize circles and triangles.

9-3 Recognize squares and rectangles.

9-4 Compare length; longest and shortest.

9-5 Measure length using informal units.

* 9-6 Measure length using a centimeter ruler.

9-7 Measure length using an inch ruler.

9-8 Tell time to the hour.

9-9 Identify circles, triangles, squares, and rectangles.

10. Addition-Subtraction Facts for 11 and 12

The Student will:

10-1 Add or subtract two numbers with sums to 10.

10-2 Add two numbers with sums of 9, 10, or 11.

10-3 Subtract two numbers with sums of 9, 10, or 11.

* 10-4 Add two numbers with sums of 10 or 11.

* 10-5 Subtract two numbers with sums of 10 or 11.

10-6 Add or subtract two numbers with sums to 11 and add three numbers with sums to 11.

* 10-7 Add two numbers with sums of 10 or 12.

* 10-8 Subtract two numbers with sums of 10 or 12.

10-9 Add or subtract two numbers with sums to 12.

10-10 Use addition or subtraction with sums to 12 in developing rebus problem solving skills.

11. Numbers to 99

The Student will:

* 11-1 Recognize tens to 90.

11-2 Recognize the value of dimes to 90¢.

11-3 Recognize place value: tens and ones.

11-4 Recognize and write the numbers 19 to 40.

* 11-5 Recognize and write the numbers 39 to 60.

11-6 Recognize the value of dimes and pennies to 60¢.

11-7 Recognize and write the numbers 59 to 80.

* 11-8 Recognize and write the numbers 79 to 99.

11-9 Order numbers to 99.

12. Two-Place Addition and Subtraction

The Student will:

12-1 Add two tens with sums to 90.

12-2 Add two 2-digit numbers with no regrouping.

12-3 Subtract two tens with sums to 90.

12-4 Subtract two 2-digit numbers with no regrouping.

12-5 Add or subtract two tens with sums to 90.

12-6 Add or subtract two 2-digit numbers with no regrouping.

12-7 Use addition or subtraction with two 2-digit numbers with no regrouping in developing rebus problem solving skills.

13. Fractions and Measurement

The Student will:

13-1 Identify shapes that are symmetrical.

* 13-2 Recognize one half.

13-3 Recognize one third.

13-4 Recognize one fourth.

13-5 Tell time to the hour and half hour.

13-6 Recognize liters and half liters.

13-7 Make conversions among cups, pints, and quarts.

13-8 Recognize the value of pennies, nickels, and dimes.

* 13-9 Recognize the value of pennies, nickels, and dimes.

14. Addition-Subtraction Facts for 13-18

The Student will:

14-1 Add two numbers with sums of 10 or 13.

14-2 Subtract two numbers with some on 10 or 13.

14-3 Add two numbers with sums of 10 or 14.

14-4 Subtract two numbers with sums of 10 or 14.

.* 14-5 Add or subtract two numbers with sums of 10 to 14.

14-6 Add or subtract two numbers with sums of 10 or 15.

14-7 Add or subtract two numbers with sums of 16 to 18.

14-8 Add or subtract two numbers with sums of 10 to 18.

* 14-9 Add or subtract two numbers with sums of 13 to 18.

15. Problem Solving

The Student will:

15-1 Solve word problems using all skills taught at each level.

15-2 Solve missing factor problems using skills taught at each level.

15-3 Solve horizontal problems using skills taught at each level.

Elementary Mathematics Objectives

Grade 2

1. Numbers to 20

The Student will:

1-1 Recognize numbers to 10.

1-2 Recognize and write numbers to 10.

1-3 Identify which number is greater and which number is less, using numbers to 10.

1-4 Order numbers to 10.

1-5 Recognize and write numbers 11 to 20.

1-6 Order numbers to 20.

1-7 Interpret a picture graph.

2. Addition-Subtraction Facts to 7

The Student will:

2-1 Add three numbers with sums to 7.

2-2 Add or subtract two numbers with sums to 7.

2-3 Use addition or subtraction with sums to 7 in developing rebus problem solving skills.

3. Addition-Subtraction Facts to 10

The Student will:

* 3-1 Add two or three numbers with sums to 10.

* 3-2 Subtract two numbers with sums of 8 to 10.

3-3 Add or subtract two numbers with sums of 8 to 10.

3-4 Recognize the value of a dime and pennies to 10¢.

3-5 Use addition or subtraction with sums to 10 in developing rebus problem solving skills.

4. Numbers to 99

The Student will:

* 4-1 Recognize and write tens to 90.

4-2 Recognize the value of a group of dimes to 90¢.

4-3 Recognize and write numbers to 99.

* 4-4 Recognize and write numbers to 99.

4-5 Recognize the value of dimes and pennies to 99¢.

4-6 Order numbers to 99.

4-7 Identify which number is greater and which number is less, using numbers to 99.

4-8 Recognize ordinal numbers to tenth.

4-9 Interpret a table.

5. Two-Place Addition and Subtraction

The Student will:

5-1 Add two tens with sums to 90.

*5-2 Add a 1- or 2-digit number to a 2-digit number with no regrouping.

5-3 Subtract two tens with sums to 90.

*5-4 Add or subtract a 1- or 2-digit number to or from a 2-digit number with no regrouping.

5-5 Use addition or subtraction of 2-digit numbers with no regrouping in solving rebus problems.

6. Addition-Subtraction Facts to 12

The Student will:

*6-1 Add two or three numbers with sums of 10 to 12.

6-2 Recognize the value of dimes and pennies to 12¢ and add with pennies to 12¢.

6-3 Add or subtract two numbers with sums to 12.

6-4 Use addition or subtraction with sums to 12 in solving rebus problems.

7. Geometry and Measurement

The Student will:

7-1 Identify boxes and balls.

*7-2 Identify cubes, cones, and cans.

*7-3 Identify circles, triangles, rectangles, and squares.

7-4 Measure length using informal units.

7-5 Measure length using a centimeter ruler.

*7-6 Measure length to the nearest centimeter.

7-7 Measure length using an inch ruler.

7-8 Measure length to the nearest inch.

7-9 Tell time to the hour.

7-10 Identify the days of the week.

8. Addition-Subtraction Facts to 15

The Student will:

*8-1 Add two or three numbers with sums of 13 to 15.

8-2 Add or subtract two numbers with sums to 15.

8-3 Recognize the value of pennies, nickels, and dimes to 15¢ and use addition or subtraction with sums to 15 in solving rebus problems.

9. Addition-Subtraction Facts to 18

The Student will:

9-1 Add two or three numbers or subtract two numbers with sums to 18.

9-2 Add or subtract two numbers with sums 16 to 18.

9-3 Interpret a table and a bar graph.

9-4 Recognize the value of pennies, nickels, and dimes to 18¢ and use addition or subtraction in solving rebus or word problems.

10. Two-Place Addition with Regrouping

The Student will:

10-1 Group a sum into tens and ones.

10-2 Add two 2-digit numbers, regrouping ones.

*10-3 Add a 2-digit number and a 1-digit number, regrouping ones.

10-4 Interpret a bar graph and make a bar graph using a table.

10-5 Recognize the value of pennies, nickels, dimes, and quarters to 50¢.

*10-6 Add two 2-digit numbers, regrouping ones, to solve rebus and word problems.

11. Two-Place Subtraction with Regrouping

The Student will:

11-1 Regroup a multiple of ten into tens and ones.

11-2 Subtract a 2-digit number from a 2-digit multiple of ten.

11-3 Regroup a 2-digit number into tens and ones.

*11-4 Subtract two 2-digit numbers, regrouping tens.

*11-5 Subtract two 2-digit numbers, regrouping tens, to solve word problems.

12. Numbers to 999; Addition and Subtraction

The Student will:

12-1 Recognize tens to 100 and hundreds to 900.

12-2 Write the standard form for hundreds and tens.

12-3 Write hundreds, tens, and ones.

*12-4 Write the standard form for hundreds, tens, and ones.

12-5 Order numbers to 999.

12-6 Add or subtract two hundreds with sums to 900.

12-7 Add or subtract two multiples of ten with sums to 990 with no regrouping.

12-8 Add two 3-digit numbers with no regrouping.

*12-9 Subtract two 3-digit numbers with no regrouping.

13. Fractions and Measurement

The Student will:

13-1 Identify shapes that are symmetrical.

13-2 Recognize one half.

*13-3 Recognize one third.

13-4 Recognize one fourth

13-5 Recognize two thirds and three fourths.

*13-6 Tell time to the half hour.

*13-7 Tell time to the quarter hour.

13-8 Convert half-liters to liters.

13-9 Make conversions among pints and quarts.

13-10 Make conversions among quarts and gallons.

*13-11 Recognize the value of pennies, nickels, dimes, and quarters to 99¢.

14. Beginning Multiplication

The Student will:

14-1 Count by twos to 18.

*14-2 Use addition or arrays to develop multiplication facts for 2, using facts to 18

*14-3 Count by fives, and use addition or arrays to develop multiplication facts for 5, using facts to 20.

14-4 Count by threes and use addition or arrays to develop multiplication facts for 3, using facts to 18.

14-5 Multiply 2, 3, or 5 by a 1-digit number, using facts to 20.

15. Problem Solving

The Student will:

15-1 Solve word problems using all skills taught at each level.

15-2 Solve missing factor problems using skills taught at each level.

15-3 Solve horizontal problems using skills taught at each level.

Elementary Mathematics Objectives

Grade 3

1. Addition and Subtraction

The Student will:

1-1 Add two numbers with sums to 10.

1-2 Subtract two numbers with sums to 10.

1-3 Add two numbers with sums to 12.

*1-4 Add three 1-digit numbers.

1-5 Subtract two numbers with sums to 12.

1-6 Add two numbers with sums to 14.

1-7 Subtract two numbers with sums to 14.

*1-8 Add two numbers with sums to 18.

*1-9 Subtract two numbers with sums to 18.

1-10 Solve word problems using information from a picture graph.

2. Numbers to 9,999

The Student will:

2-1 Write the standard form for 1 ten to 9 tens.

2-2 Write the standard form for tens and ones.

2-3 Recognize the value of dimes and pennies to 99¢.

2-4 Compare two numbers less than 100.

*2-5 Order numbers to 999.

*2-6 Write the value of dollars, dimes, and pennies to $9.99.

2-7 Compare two numbers less than 1000.

*2-8 Write the standard form for thousands, hundreds, tens, and ones.

2-9 Solve word problems using information from a chart.

3. Addition

The Student will:

3-1 Add two multiples of ten with no regrouping.

3-2 Add two 2-digit numbers with no regrouping.

3-3 Add two 2-digit numbers, regrouping 10 ones as 1 ten.

3-4 Add two 2-digit numbers, regrouping ones.

3-5 Add a 1-digit number to a 2-digit number with no regrouping.

*3-6 Add a 1-digit number to a 2-digit number, regrouping ones.

3-7 Add three 1-digit numbers.

*3-8 Add three 2-digit numbers, regrouping ones.

3-9 Add two 3-digit numbers with no regrouping.

3-10 Match an addition or a subtraction with a rebus story.

4. Subtraction

The Student will:

4-1 Subtract two tens with sums to 90.

4-2 Subtract two 2-digit numbers with no regrouping.

4-3 Subtract a 2-digit number from a 2-digit multiple of ten.

4-4 Subtract two 2-digit numbers, regrouping tens.

4-5 Subtract a 1-digit number from a 2-digit number with no regrouping.

*4-6 Subtract a 1-digit number from a 2-digit number, regrouping tens.

*4-7 Subtract two 3-digit numbers with no regrouping.

*4-8 Use an addition or a subtraction to solve word problems.

5. Multiplication

The Student will:

5-1 Add the same number repeatedly.

*5-2 Use repeated addition to develop multiplication facts to 21 in horizontal form.

5-3 Multiply two 1-digit numbers in horizontal form, using facts to 21.

*5-4 Multiply two 1-digit numbers in either order in horizontal form, using facts to 21.

5-5 Multiply two 1-digit numbers, using facts to 21.

5-6 Multiply to solve word problems.

6. Division

The Student will:

6-1 Use repeated subtraction to develop division facts to 21.

*6-2 Use arrays to develop division facts to 21.

6-3 Divide numbers to 21 by a 1-digit number, using the symbol ÷.

6-4 Use multiplication facts to 21 to develop division facts, using the symbol ÷.

6-5 Use two forms for division.

6-6 Use multiplication facts to 21 to develop division facts.

*6-7 Use 1-digit numbers as factors and divisors, using facts to 21.

*5-8 Add, subtract, multiply, or divide to solve word problems.

7. Measurement

The Student will:

7-1 Tell time to the nearest minute.

*7-2 Tell time to the nearest minute on a regular and a digital clock.

*7-3 Measure length to the nearest centimeter.

7-4 Determine an appropriate metric unit for measuring length, using centimeter, meter, or kilometer.

7-5 Determine an appropriate metric unit for measuring mass (weight), using gram or kilogram.

7-6 Convert half-liters to liters.

7-7 Measure length to the nearest inch and determine an appropriate U.S. Customary unit for measuring length, using inch, foot, yard, or mile.

7-8 Determine an appropriate U.S. Customary unit for measuring weight, using ounce or pound.

7-9 Make conversions among cups, pints, quarts, and gallons.

7-10 Solve problems involving metric units.

8. Multiplication and Vision

The Student will:

8-1 Relate addition, multiplication, and division.

8-2 Use 2 as a factor and divisor, working in horizontal form.

*8-3 Use 2 as a factor and divisor, working in vertical form.

8-4 Use 3 as a factor and divisor, working in horizontal form.

*8-5 Use 3 as a factor and divisor, working in vertical form.

8-6 Use 4 as a factor and divisor, working in horizontal form.

*8-7 Use 4 as a factor and divisor, working in vertical form.

*8-8 Use 5 as a factor and divisor, working in horizontal form.

8-9 Use 1 through 5 as factors and divisors.

8-10 Multiply or divide to solve word problems.

9. Multiplication and Division

The Student will:

9-1 Use 2 through 5 as factors.

9-2 Use 6 as a factor and divisor, working in horizontal form.

*9-3 Use 6 as a factor and divisor, working in vertical form.

9-4 Use 7 as a factor and divisor, working in horizontal form.

*9-5 Use 7 as a factor and divisor, working in vertical form.

9-6 Use 8 as a factor and divisor, working in horizontal form.

*9-7 Use 8 as a factor and divisor, working in vertical form.

9. Multiplication and Division continued

The Student will:

9-8 Use 9 as a factor and divisor, working in horizontal form.

*9-9 Use 9 as a factor and divisor, working in vertical form.

9-10 Using 6 through 9 as factors and divisors.

9-11 Add, subtract, multiply, or divide to solve word problems.

10. Addition and Subtraction

The Student will:

10-1 Add two or three 3-digit numbers with no regrouping.

10-2 Add two or three 3-digit numbers, regrouping ones.

10-3 Add two or three 3-digit numbers, regrouping tens.

*10-4 Add two or three 3-digit numbers, regrouping ones and tens.

10-5 Add with money in amounts less than $10.

10-6 Subtract two 3-digit numbers, regrouping tens.

10-7 Subtract two 3-digit numbers, regrouping hundreds.

*10-8 Subtract two 3-digit numbers, regrouping tens and hundreds.

10-9 Subtract with money in amounts less than $10.

10-10 Add or subtract two 4-digit numbers with regrouping.

10-11 Add or subtract to solve word problems using a four-step method.

11. Multiplication and Division

The Student will:

11-1 Multiply a 2-digit multiple of ten by a 1-digit number.

11-2 Multiply a 2-digit number by a 1-digit number with no regrouping.

11-3 Multiply a 2-digit number less than 20 by a 1-digit number with regrouping (2-digit products.)

11-4 Multiply a 2-digit number by a 1-digit number with regrouping (2-digit products.)

*11-5 Multiply a 2-digit number by a 1-digit number with regrouping (3-digit products.)

*11-6 Multiply a 3-digit number by a 1-digit number with regrouping (3-digit products.)

11-7 Divide a 2-digit number by a 1-digit number with a remainder.

*11-8 Divide a 2-digit number by a 1-digit number with a remainder.

*11-9 Divide a 2-digit number by a 1-digit number with a remainder. (Two-stage division.)

11-10 Multiply or divide to solve word problems using a four-step method

12. Fractions and Decimals

The Student will:

12-1 Write the unit fraction for the shaded part of a region.

* 12-2 Write a fraction for the shaded part of a region.

12-3 Compare two fractions with the same denominator, with the aid of a model.

12-4 Write equal fractions (change a fraction to greater terms with the aid of a model).

12-5 Write a mixed number for the shaded parts of regions.

12-6 Write a fraction for the indicated part of a group of objects.

12-7 Find a fractional part of a whole number, with the aid of a model.

* 12-8 Write tenths as decimals.

12-9 Solve word problems using a four-step method.

13. Geometry

The Student will:

* 13-1 Identify cubes, cylinders, and spheres.

13-2 Identify cubes, spheres, cylinders, cones, and pyramids.

* 13-3 Identify circles, triangles, rectangles, and squares.

13-4 Find the perimeter of a shape.

13-5 Find the area of a shape by counting the square units that will cover it.

13-6 Find the volume of a shape by counting the cubic units that will fit inside it.

13-7 Solve word problems using information from a drawing.

14. Problem Solving

The Student will:

14-1 Solve word problems using all skills taught at each level.

14-2 Solve missing factor problems using skills taught at each level.

14-3 Solve horizontal problems using skills taught at each level.

Elementary Mathematics Objectives

Grade 4

1. Addition and Subtraction

The Student will:

1-1 Add or subtract two numbers with sums to 9.

1-2 Add or subtract two numbers with sums to 13.

* 1-3 Add or subtract two numbers with sums to 18.

1-4 Use number patterns to add or subtract two numbers with sums to 18.

1-5 Add a 1-digit and a 2-digit number with a sum to 20.

* 1-6 Add a 1-digit and a 2-digit number with a sum to 28.

* 1-7 Add three or more 1-digit numbers.

1-8 Add or subtract to solve word problems.

2. Numbers and Measurement

The Student will:

* 2-1 Compare two numbers less than 100.

* 2-2 Write the standard form for hundreds, tens, and ones.

2-3 Write numbers that are between two 4-digit numbers.

2-4 Write numbers that are between two 4-, 5-, 6-, or 7-digit numbers.

2-5 Round a number less than 1000 to the nearest ten or hundred.

2-6 Round amounts of money to the nearest dollar.

* 2-7 Determine an appropriate metric unit using centimeter, meter or kilometer.

2-8 Determine an appropriate metric unit using gram or kilogram.

2-9 Determine an appropriate U.S. Customary unit using inch, foot, yard, mile, ounce, pound, or ton.

2-10 Solve word problems using comparison subtraction.

3. Addition and Subtraction

The Student will:

3-1 Add two or three 2-digit numbers with no regrouping.

* 3-2 Add two or three 2-digit numbers, regrouping ones.

* 3-3 Add one, two, or three 1-digit numbers, regrouping ones and tens.

3-4 Add two, three, or four 3-digit numbers, regrouping ones and tens

* 3-5 Add two 4-digit numbers, regrouping ones, tens, and hundreds.

* 3-6 Subtract two 2-digit numbers, regrouping tens,

3-7 Subtract two 3-digit numbers, regrouping tens and hundreds.

* 3-8 Subtract two 4-digit numbers, regrouping tens, hundreds, and thou

3-9 Add or subtract with money in amounts less than $100.

3-10 Estimate a sum or difference of two numbers.

3-11 Solve word problems by estimating sums and differences.

4. Multiplication and Division

The Student will:

4-1 Use addition to develop multiplication facts.

4-2 Use arrays to develop multiplication facts.

4-3 Use arrays and related multiplication facts to develop division facts.

* 4-4 Use 2 as a factor, divisor, and quotient.

* 4-5 Use 3 as a factor, divisor, and quotient.

* 4-6 Use 4 as a factor, divisor, and quotient.

* 4-7 Use 0 through 4 as factors, and 1 through 4 as divisors and quotients.

4-8 Add, subtract, multiply, and divide to solve word problems.

5. Multiplication and Division

The Student will:

* 5-1 Use 5 as a factor, divisor, and quotient.

* 5-2 Use 6 as a factor, disisor, and quotient.

5-3 Use 0 through 6 as factors, and 1 through 6 as divisors.

* 5-4 Use 7 as a factor, divisor, and quotient.

* 5-5 Use 8 as a factor, divisor, and quotient.

5-6 Use 0 through 8 as factors, and 1 through 8 as divisors.

* 5-7 Use 9 as a factor divisor, and quotient.

5-8 Use 0 through 9 as factors, and 1 through 9 as divisors.

5-9 Solve word problems involving money.

6. Measurement

6-1 Measure the length of an object to the nearest centimeter.

* 6-2 Find the perimeter of a shape.

6-3 Measure the length of an object to the nearest inch.

* 6-4 Find the area of a shape by counting the number of units that fit inside it, or by multiplying its dimensions.

6-5 Find the volume of a box by counting the number of cubic units that fit inside it, or by multiplying its dimensions.

6-6 Determine an appropriate metric unit for liquid measure using milliliter and liter.

6-7 Make conversions among cups, pints, quarts, and gallons.

6-8 Use seconds, minutes, hours, days, weeks, months and years to measure time.

6-9 Solve word problems and choose the appropriate unit for the answe

7. Multiplication by Ones

The Student will:

7-1 Multiply multiples of 10 less than 5000 by a 1-digit number.

* 7-2 Multiply multiples of 10 less than 10, 000 by a 1-digit number.

7-3 Multiply a 2-digit number by a 1-digit number with no regrouping.

* 7-4 Multiply a 2-digit number by a 1-digit number, regrouping ones.

7-5 Estimate a product of two numbers.

7-6 Multiply a 3-digit number by a 1-digit number, regrouping ones an hundreds.

* 7-7 Multiply a 3-digit number by a 1-digit number, regrouping ones, tens, and hundreds.

7-8 Multiply a 4-digit number by a 1-digit number, regrouping as nece

7-9 Multiply money by a 1-digit number.

* 7-10 Solve word problems using information from a bar graph.

8. Division

The Student will:

8-1 Use arrays to develop division facts to 21.

* 8-2 Divide a 2-digit number by a 1-digit number with a remainder. (One-stage division)

8-3 Divide a 2-digit or 3-digit multiple of 10 by a 1-digit number with no remainder. (One-stage division)

8-4 Divide a 2-digit or 3-digit number with no reminder, (Both digi of the dividend are multiples of the divisor: two-stage division

8-5 Divide a 2-digit number by a 1-digit number with no remainder. (first digit of the dividend is not a multiple of the divisor; tw stage division.)

* 8-6 Divide a 2-digit number by a 1-digit number with a remainder. (Two-stage division)

8-7 Divide a 3-digit number by a 1-digit number with no remainder. (first two digits of the dividend are multiples of the divisor; two-stage division.)

8-8 Divide a 3-digit number by a 1-digit number with no remainder. (Two-stage division)

* 8-9 Divide a 3-digit number by a 1-digit number with a remainder. (Two-stage division)

8-10 Solve word problems which may require information from a table o measures.

9. Fractions and Decimals

The Student will:

9-1 Write a fraction for the shaded part of a region.

* 9-2 Write a fraction for the indicated part of a group.

9-3 Write equal fractions (change fractions to greater terms with the aid of a model).

9-4 Write equal fractions (change fractions to greater terms).

9-5 Write the simplest form for a fraction.

* 9-6 Compare two fractions with like denominators.

9-7 Find the fractional part of a whole number, using unit fractions.

9-8 Find a fractional part of a whole number.

* 9-9 Write decimals using tenths.

9-10 Write decimals using hundredths.

9-11 Solve word problems using information from a chart.

10. Multiplication

10-1 Multiply a 2-digit number by a 1-digit number, regrouping ones an tens.

10-2 Multiply a 3- or 4-digit number by a 1-digit number, regrouping as necessary.

10-3 Multiply two 2-digit numbers one of which is a multiple of ten.

10-4 Multiply two 2-digit numbers one of which is less than 20.

* 10-5 Multiply two 2-digit numbers.

10-6 Multiply a 3-digit number by a 2-digit number which is a multiple of ten.

10-7 Multiply a 3-digit number by a 2-digit number which is less than

* 10-8 Multiply a 3-digit number by a 2-digit number.

10-9 Multiply money by a 2-digit number.

10-10 Choose the most likely answer to a word problem.

11. Division

The Student will:

11-1 Divide a 2 or 3-digit number by a 1-digit number with a remainder. (Two-stage division)

11-2 Divide a 3-digit number by a 1-digit number with no remainder. (E: digit of the dividend is a multiple of the divisor; threestage division.)

11-3 Divide a 3-digit number by a 1-digit number with no remainder. (Three-stage division)

* 11-4 Divide a 3-digit number by a 1-digit number with no remainder. (Three-stage division)

11-5 Divide a 3-digit number by a 1-digit number with a remainder. (Three-stage division)

11. Division cont.

* 11-6 Divide a 3-digit number by a 1-digit number with a zero in the quotient.

11-7 Divide a 2 or 3-digit number by a 2-digit multiple of ten. (One-stage division)

11-8 Divide a 2 or 3-digit number by a 2-digit number with a remainder (One-stage division)

11-9 Divide a 3-digit number by a 2-digit number with a remainder. (Two-stage division)

11-10 Use two arithmetic steps to solve word problems.

12. Geometry

The Student will:

* 12-1 Identify rectangular boxes, cubes, spheres, pyramids, cones and cylinders as they occur in real life.

12-2 Identify the number of sides and angles in triangles, quadrilater and pentagons.

12-3 Identify points, lines, angles, and triangles.

* 12-4 Identify an angle as a right angle, angle less than a right angle or angle greater than a right angle.

12-5 Match a triangle with an appropriate description of the triangle.

12-6 Identify parallel lines and right angles.

12-7 Identify a quadrilateral as a rectangle or square, and answer questions related to these shapes.

12-8 Write the number pair for a point.

12-9 Measure the diameter of a circle.

12-10 Solve word problems using information from a drawing.

13. Fractions and Decimals

The Student will:

* 13-1 Add fractions with like denominators with no regrouping.

* 13-2 Subtract fractions with like denominators.

13-3 Add fractions with unlike denominators with no regrouping. (One denominator divides the other.)

13-4 Subtract fractions with unlike denominators. (One denominator divides the other.

13-5 Write a fraction as a mixed number.

13-6 Write a decimal for a mixed number, using tenths and hundredths.

* 13-7 Add and subtract with decimals, using tenths.

13-8 Add and subtract with decimals, using hundredths.

13-9 Add, subtract, multiply, and divide to solve word problems.

14. Problem Solving

The Student will:

14-1 Solve word problems using all skills taught at each level.

14-2 Solve missing factor problems using skills taught at each level.

14-3 Solve horizontal problems using skills taught at each level.

Elementary Mathematics Objectives

Grade 5

1. Addition and Subtraction

The Student will:

1-1 Add or subtract two numbers with sums to 18.

1-2 Add two 2-digit numbers, regrouping ones.

1-3 Add two or more 1- or 2-digit numbers, regrouping ones.

1-4 Add two, three, or four 3-digit numbers, regrouping ones and tens

* 1-5 Add two, three, or four 4- or 5-digit numbers with regrouping.

1-6 Subtract two 2-digit numbers, regrouping tens.

1-7 Subtract two 3-digit numbers, regrouping tens and hundreds.

* 1-8 Subtract two 4- or 5-digit numbers with regrouping.

1-9 Add or subtract to solve word problems.

2. Numbers and Measurement

The Student will"

2-1 Write the standard form for hundreds, tens, and ones.

* 2-2 Write the standard form of numbers having up to 6 digits.

2-3 Write the standard form of numbers having up to 12 digits.

* 2-4 Compare two numbers having up to 4 digits.

* 2-5 Round a number less than 10000 to the nearest ten or hundred.

* 2-6 Determine an appropriate metric unit for measuring length, using centimeter, meter, or kilometer.

2-7 Determine an appropriate metric unit, using milliliter, liter, gr or kilogram.

2-8 Determine an appropriate U.S. Customary unit using inch, foot, ya mile, ounce, pound, ton, pint, quart, gallon, or degree Fahrenhei

2-9 Add or subtract with money.

2-10 Solve word problems using comparison subtraction.

3. Multiplication

The Student will:

3-1 Use 2 through 9 as factors and divisors.

3-2 Multiply a 2-digit number by a 1-digit number with regrouping. (3-digit products)

* 3-3 Multiply a 3- or 4-digit number by a 1-digit number, regrouping as necessary.

* 3-4 Multiply two 2-digit numbers.

3-5 Find a rate.

* 3-6 Find the least common multiple of two numbers.

* 3-7 Solve word problems involving money.

4. Division

The Student will:

4-1 Divide a 2-digit number by a 1-digit number with a remainder. (One-stage division)

4-2 Divide a 3-digit number by a 1-digit number with a remainder. (The first two digits of the dividend are multiples of the divisor; one-stage division)

* 4-3 Divide a 2- or 3-digit number by a 1-digit number with a remainder (Two-stage division)

4-4 Divide a 3- or 4-digit number by a 1-digit number with a remainder (Three-stage division)

4-5 Divide a 3- to 5-digit number by a 1-digit number with a remainder (Four-stage division)

* 4-6 Divide a 3- or 4-digit number by a 1-digit number with a zero in the quotient.

4-7 Divide a 2- or 3-digit number by a 2-digit multiple of ten. (One-stage division)

* 4-8 Find the greatest common factor of two numbers.

4-9 Add, subtract, multiply, or divide to solve word problems.

5. Multiplication and Division

The Student will:

5-1 Estimate a product of two numbers.

* 5-2 Multiply a 2- or 3-digit number by a 2-digit number.

5-3 Multiply money by a 2-digit number.

* 5-4 Divide a 2- or 3-digit number by a 2-digit multiple of ten. (One-stage division)

5-5 Divide a 3-digit number by a 2-digit number with a remainder. (One-stage division)

* 5-6 Divide a 3-digit number by a 2-digit number with a remainder. (One-stage division).

5-7 Divide a 3- or 4-digit number by a 2-digit multiple of ten. (Two-stage division).

* 5-8 Divide a 3- or 4-digit number by a 2-digit number with a remainder (Two-stage division)

5-9 Solve word problems which have innecessary information.

6. Fractions

The Student will:

6-1 Write a fraction for the shaded part of a region.

6-2 Identify the numberator and denominator of a fraction.

* 6-3 Find a fractional part of a number.

* 6-4 Write equal fractions. (Change a fraction to greater terms.)

6. Fractions continued

The Student will:

*6-5 Write the simplest form for a fraction.

6-6 Compare two fractions with the denominators.

6-7 Solve word problems using information from a circle graph.

7. Measurement

The Student will:

7-1 Measure length to the nearest centimeter.

7-2 Find the perimeter of a shape.

7-3 Find the diameter and circumference of a circle.

7-4 Determine if an angle is a right angle, less than a right angle, or greater than a right angle.

7-5 Find the size of an angle.

7-6 Find the area of a shape by counting the square centimeters that fit inside it.

*7-7 Find the area of a rectangle.

*7-8 Find the volume of a box.

7-9 Interpret a scale drawing.

7-10 Solve word problems which may require information from a table of measures.

8. Decimals

The Student will:

8-1 Write decimals using tenths.

8-2 Write decimals using hundredths.

*8-3 Write decimals greater than 1 using tenths and hundredths.

*8-4 Compare decimals.

*8-5 Add decimals to hundredths.

*8-6 Subtract decimals to hundredths.

8-7 Multiply a decimal by a 1-digit whole number.

8-8 Choose the most likely answer to a word problem.

9. Addition of Fractions

The Student will:

9-1 Add fractions with like denominators with no regrouping.

9-2 Write a fraction as a mixed number.

*9-3 Write a fraction as a mixed number or a whole number.

*9-4 Add fractions with unlike denominators with regrouping. (One denominator divides the other)

9. Addition of Fractions continued

The Student will:

9-5 Add fractions with unlike denominators with regrouping.

*9-6 Add mixed numbers with like denominators with regrouping.

9-7 Add mixed numbers with unlike denominators with regrouping.

*9-8 Compare two fractions with unlike denominators.

9-9 Solve word problems using information from a pictograph.

10. Subtraction of Fractions

The Student will:

10-1 Subtract fractions with like denominators.

10-2 Subtract fractions with unlike denominators.

10-3 Subtract a fraction from a whole number.

*10-4 Subtract a mixed number or a fraction from a whole number or another mixed number with like denominator with regrouping.

10-5 Subtract mixed numbers with unlike denominators with no regrouping.

10-6 Subtract mixed numbers with unlike denominators with regrouping.

10-7 Use two or more arithmetic steps to solve word problems.

11. Estimation and Statistics

The Student will:

*11-1 Use an estimate to check the reasonableness of a given sum, difference, product, or quotient.

11-2 Round numbers to the place given and round amounts of money to the nearest dollar.

11-3 Estimate a sum or difference of two numbers.

11-4 Estimate a product of two numbers.

11-5 Estimate a quotient of two numbers.

*11-6 Find the mean of a group of numbers.

11-7 Find the median of a group of numbers.

11-8 Interpret a bar graph.

11-9 Interpret a double bar graph.

11-10 Solve word problems using estimation and statistics.

12. Fractions, Decimals, and Percents

The Student will:

12-1 Multiply a whole number and a fraction.

* 12-2 Multiply two unit fractions.

12-3 Multiply a fraction and a unit fraction.

12-4 Multiply two fractions.

12-5 Multiply a mixed number by a fraction, whole number, or another mixed number.

* 12-6 Multiply a decimal and a whole number or two decimals in tenths.

12-7 Write fractions as percents and percents as fractions.

12-8 Write decimals as percents and percents as decimals.

* 12-9 Solve word problems using a 4-step method.

13. Geometry

The Student will:

* 13-1 Identify angles, parellel lines, and perpendicular lines.

* 13-2 Identify triangles, quadrilaterals, pentagons, and hexagons.

13-3 Match a triangle with an appropriate description of the triangle.

13-4 Identify parellelograms, rectangles, squares, and quadrilaterals.

13-5 Identify shapes that have the same shape and size (congruent shapes).

13-6 Identify shapes that have the same shape (similar shapes).

13-7 Write the number pair for a point and name the point for a number pair.

13-8 Identify rectangular boxes, cubes, and pyramids.

13-9 Identify spheres, cones, and cylinders.

13-10 Solve word problems involving geometric shapes.

14. Problem Solving

The Student will:

14-1 Solve word problems using all skills taught at each level.

14-2 Solve missing factor problems using skills taught at each level.

14-3 Solve horizontal problems using skills taught at each level.

Elementary Mathematics Objectives

Grade 6

1. Addition and Subtraction

The Student will:

1-1 Add or subtract two numbers with sums to 18.

1-2 Add three 1-digit numbers.

* 1-3 Add 4- or 5-digit numbers with regrouping.

1-4 Add with money.

* 1-5 Subtract two 4-digit or 5-digit numbers with regrouping.

1-6 Make Change.

* 1-7 Solve word problems using a four-step method.

2. Numbers and Measurements

The Student will:

2-1 Write the standard form for thousands, hundreds, tens and ones.

* 2-2 Write the standard form for numbers up to 12 digits.

2-3 Compare two numbers having up to 4 digits.

* 2-4 Compare numbers to millions.

2-5 Round a number to the nearest ten, hundred, or thousand.

* 2-6 Determine an appropriate metric unit using millimeter, centimeter, meter, or kilometer.

2-7 Determine an appropriate metric unit using milliliter, liter, gram, or kilogram.

2-8 Add or subtract United States Customary units of length.

2-9 Add United States Customary units of weight or liquid measure.

2-10 Solve word problems involving metric units.

3. Multiplication

The Student will:

3-1 Multiply two 1-digit numbers.

* 3-2 Multiply a 2-digit number or a 3-digit number by a 1-digit number, regrouping as necessary.

3-3 Multiply two 2-digit numbers.

* 3-4 Multiply a 3-digit number by a 2-digit or 3-digit number.

* 3-5 Estimate a product of two numbers.

3-6 Write the standard form for numbers in exponential notation.

3-7 List the multiples of a given number.

* 3-8 Write the least common multiple (LCM) of two numbers.

3-9 Multiply metric units or money by a 2-digit number.

3-10 Solve word problems involving money.

4. Decimals

The Student will:

4-1 Write decimals using tenths and hundredths.

* 4-2 Write decimals greater than 1 using tenths and hundredths.

* 4-3 Write decimals to thousandths.

4-4 Write equal decimals by annexing zeros.

4-5 Compare decimals.

* 4-6 Add decimals to thousandths.

* 4-7 Subtract decimals to thousandths.

4-8 Multiply a decimal by a 1-digit or 2-digit whole number.

4-9 Solve word problems involving metric units and money.

5. Division

The Student will:

5-1 Divide a 2-digit number by a 1-digit number with a remainder. (One-stage division)

5-2 Divide a 2- or 3-digit number by a 1-digit number with a remainder (Two-stage division)

5-3 Divide a 3- or 4-digit number by a 1-digit number with a remainder (Three or four-stage division)

* 5-4 Divide a 4- or 5-digit number by a 1-digit number with a zero in the quotient.

5-5 Divide a 3- or 4-digit number by a 2-digit multiple of ten. (Two-stage division)

5-6 Divide a 2- or 3-digit number by a 2-digit number with a remainder (One-stage division)

* 5-7 Divide a 3- or 4-digit number by a 2-digit number with a remainder (Two-stage division)

5-8 Divide a 4- or 5-digit number by a 2-digit number using up to four stages and check the quotient and remainder.

* 5-9 Find the greatest common factor of two numbers.

5-10 Divide to solve word problems.

6. Fractions

The Student will:

6-1 Identify the numerator and denominator of a fraction.

6-2 Find a fractional part of a whole number.

6-3 Write equal fractions. (Change a fraction to greater terms.)

* 6-4 Write the simplest form for a fraction.

6-5 Compare two fractions with unlike denominators.

6-6 Write a mixed number as a fraction.

6-7 Write a fraction as a mixed number or a whole number.

6. Fractions cont.

* 6-8 Write a fraction or mixed number with denominator 10, 100, or 1000 as a decimal and a decimal as a fraction.

6-9 Solve word problems using information from a circle graph.

7. Measurement

The Student will:

7-1 Measure length to the nearest centimeter.

7-2 Find the perimeter of a shape.

7-3 Find the diameter and circumference of a circle.

7-4 Measure and draw angles.

* 7-5 Find the area of a rectangle and triangle.

7-6 Find the area of a circle.

* 7-7 Find the volume of a box.

7-8 Find the volume of a cylinder.

7-9 Interpret a scale drawing.

7-10 Solve word problems involving geometric applications.

8. Multiplication of Fractions, Decimals

The Student will:

8-1 Multiply a whole number and a fraction.

* 8-2 Multiply two fractions.

* 8-3 Multiply a mixed number by a fraction, whole number, or another mixed number.

* 8-4 Multiply a decimal and a whole number or two decimals in tenths.

* 8-5 Multiply two decimals.

8-6 Round a decimal to the nearest whole number, tenth, or hundredth.

8-7 Estimate a product of two numbers, at least one of which is a decimal.

8-8 Multiply metric units or money by a whole number or decimal.

8-9 Solve word problems involving fractions or decimals.

9. Addition and Subtraction of Fractions

The Student will:

9-1 Add fractions with like denominators with regrouping.

* 9-2 Add fractions with unlike denominators with regrouping.

* 9-3 Add mixed numbers with like and unlike denominators with regroupi

* 9-4 Subtract fractions with unlike denominators.

9-5 Subtract mixed numbers with unlike denominators with no regroupin

9-6 Subtract a mixed number or a fraction from a whole number or another mixed number with like denominator with regrouping.

9. Addition and Subtraction of Fractions cont.

* 9-7 Subtract mixed numbers with unlike denominators with regrouping.

9-8 Solve word problems involving mixed numbers.

10. Estimation and Statistics

The Student will:

10-1 Round numbers to the place given.

10-2 Estimate a sum or difference of two numbers.

10-3 Estimate a product or quotient of two numbers.

* 10-4 Estimate a sum or difference of two decimals.

10-5 Find the range and the mode of a group of numbers.

* 10-6 Find the mean of a group of numbers.

10-7 Find the median of a group of numbers.

10-8 Interpret a bar graph.

10-9 Interpret a line graph.

10-10 Solve word problems using a double-line graph.

11. Geometry

The Student will:

* 11-1 Identify angles, parallel lines, and perpendicular lines.

11-2 Identify triangles, quadrilaterals, pentagons, hexagons, and octa

* 11-3 Identify right triangles, isosceles triangles, and equilateral triangles.

11-4 Identify parallelograms, rhombuses, rectangles, and squares.

11-5 Identify shapes that have the same shape(corgruent shapes).

11-6 Identify shapes that have the same shape (similar shapes).

* 11-7 Write the number pair for a point and name the point for a number pair.

11-8 Identify pyramids and prisms.

11-9 Identify spheres, cylinders, and cones.

11-10 Solve word problems involving geometric shapes.

12. Division of Fractions, Decimals

The Student will:

12-1 Relate division by a whole number to multiplication by its reciprocal.

12-2 Divide a fraction by a whole number.

12-3 Divide a fraction or a whole number by a unit fraction.

* 12-4 Divide a whole number or a fraction by a fraction.

* 12-5 Divide a decimal by a 1- or 2-digit whole number.

12. Division of Fractions, Decimals cont.

12-6 Divide a whole number or a decimal by a decimal in tenths.

12-7 Divide a whole number or a decimal by a decimal in hundredths.

12-8 Divide two decimals, rounding the quotient to the nearest hundreth

12-9 Write a fraction as a decimal to the nearest hundreth.

* 12-10 Solve word problems involving money.

13. Percents

The Student will:

13-1 Write fractions with denominators of 100 as percents and percents as fractions.

* 13-2 Write fractions as percents and percents as fractions.

* 13-3 Write decimals as percents and percents as decimals.

13-4 Find a percent of a number by using equal fractions.

13-5 Find a percent of a number by using equal decimals.

13-6 Find the sales tax and the total amount to be paid.

13-7 Find the percent one number is of another number.

13-8 Interpret a circle graph.

13-9 Use percents with circle graphs to solve problems.

14. Problem Solving

The Student will:

14-1 Solve word problems using all skills taught at each level.

14-2 Solve missing factor problems using skills taught at each level.

14-3 Solve horizontal problems using skills taught at each level.